DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: 2. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

2. Claim 3 is objected to because of the following informalities:

- Lack of antecedent basis: "a second supply submodule" lacks antecedent basis because there is not a first supply submodule. The examiner suggests changing "a second supply submodule" to "a second submodule".

Appropriate correction is required.

3. Claim 14 is objected to because of the following informalities:

- Lack of antecedent basis: "said second submodule" lacks antecedent basis because only a second supply submodule has been claimed. The examiner suggests making the changes to claim 3 listed above to correct the mistake.

Appropriate correction is required.

For purposes of examination, the examiner will treat claim 14 as if claim 3 has been modified for appropriate antecedent basis as described above.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-17, 19-21, 23-25, and 28-29 are rejected under 35 U.S.C. 102(b) as being unpatentable over Schofield et al. (US Patent Application Publication US 2002/0003571 A1) in view of Talbot (US Patent 4,649,027).

In re claim 1:

Schofield et al. teaches a camera system for supervision of an exterior environment applicable to a motor vehicle rear view mirror (pages 22-23, paragraph [0284] and page 65, paragraph [0470]), said camera being adapted for detecting the presence of objects susceptible to collide with said vehicle, in a determined supervisory field, covering at least one dead angle ("blind spot", page 22. paragraph [0284]), said system being of the type including a device suitable to acquire images picked up from the exterior (camera

2146 has exterior view, page 22, paragraph [0284]) and at least one system for processing and analyzing the signals obtained by the camera, comprising at least two electrically interconnected and communicated modules:

a) a first module which comprises an electro-optical detecting device (cmos cameras are electro-optical detecting devices, page 2, paragraph [0018] and Fig. 112, 8518, page 65, paragraph [0471]), and

b) a second module acting as vehicle and/or user interface, distanced from the previous one (Fig. 90, 8412, pages 61-62, paragraph [0446]), operating the components of said two modules at, at least, two different voltage levels (12V or 42V vehicle battery system, page 35, paragraph [0326]).

Schofield et al. does not explicitly teach the second module foreseeing at least one filtration unit associated with said two modules as a whole, or the two modules being operated at, at least two different voltage levels. Talbot discloses at least one filtration unit (Talbot describes the filter as a bypass capacitor used to reduce noise on the output of a voltage regulator, column 5, lines 3-4). It would have been obvious to one having ordinary skill in the art at the time of invention to implement the noise-reducing filtration unit of Talbot on all inputs and outputs of all modules within the electrical system taught by Schofield et al. to obtain the desirable feature of a low-electrical-noise power supply and low-noise signal paths between modules.

In re claim 2:

Schofield et al. as modified by Talbot as applied to claim 1 above discloses said first module (Schofield et al., 8518) comprises at least processing means (Schofield et al. discusses using microchips, PCBs, and circuitry to control the cameras, page 44, paragraph [0379], therefore the first module/camera comprises processing means).

In re claim 3:

Schofield et al. as modified by Talbot as applied to claim 3 above discloses said second module is itself divided into two interconnected submodules:

b.1) a first submodule, distanced from said first module, which comprises at least one regulating circuit (Schofield et al. discusses using a switching regulator circuit, page 35, paragraph [0326]), and

b.2) a second supply submodule, acting also as vehicle and/or user interface, distanced from the previous one (Schofield et al., Fig. 90, 8412, pages 61-62, paragraph [0446]).

In re claim 4:

Schofield et al. as modified by Talbot as applied to claim 1 above discloses said electro-optical detecting device is of C-MOS technology (Schofield et al., cmos cameras are electro-optical detecting devices, page 2, paragraph [0018]).

In re claim 5:

Schofield et al. as modified by Talbot as applied to claim 3 above discloses said processing means comprises a processor and memories (ASIC microchip is a processor, Schofield et al., page 44, paragraph [0379] and it is reasonable to expect an ASIC microchip and circuitry to have memory, especially in view of the use of electronic memory on Schofield et al., page 12, paragraph [0242] and pages 31-32, paragraph [0316]).

In re claims 6-7:

Schofield et al. as modified by Talbot as applied to claim 5 above discloses at least one filter (Talbot describes the filter as a bypass capacitor used to reduce noise on the output of a voltage regulator, column 5, lines 3-4).

Schofield et al. as modified by Talbot as applied to claim 5 above does not explicitly disclose said first submodule comprises one or more filters and said second submodule comprises one or more filters, or wherein said filter of the first module is one, the mentioned one or more filters of the first submodule are two and said one or more filters of the second submodule are two. However, use of filters to obviate noise in power systems is a common practice in sensitive electronic equipment that functions with DC power supplies. Talbot discloses one such example of using a filter (also known commonly as a bypass capacitor or de-coupling capacitor) to obviate noise at the output of a voltage regulator (column 5, lines 3-4). Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to place filters in the form of

bypass capacitors taught by Talbot between every functional block taught by Schofield et al. as modified by Talbot as applied to claim 5 (filters placed at all electrical connection points between camera, user interface/display device, and all connectors between modules) to obtain the desirable feature of reducing the electrical noise throughout the system to improve the sensitivity and performance of the camera and the electrical system as a whole. Thus, the camera output has one filter, the regulating connector has two filters (one on the camera side, one on the interface connector side), and the interface has two filters (one on the regulating connector side and one on the vehicle electrical system connection side).

In re claim 8:

Schofield et al. as modified by Talbot as applied to claim 7 above discloses wherein the second submodule (user interface module) comprises at least one regulating circuit (Schofield et al., switching voltage regulator circuit, page 35, paragraph [0326]), one control circuit (monitoring microprocessor, page 57, paragraph [0418] and ASIC microchips for controlling cameras and displays, page 44, paragraph [0379]), one amplification circuit (Schofield et al., sound amplification circuit for assembly 6812, pages 52-53, paragraph [0405], or camera image processing for adjusting gain of the image, page 46, paragraph [0386]) and one communication circuit (Schofield et al., image data transmitted wirelessly with communication circuitry, page 20, paragraph [0267] and page 28, paragraph [0309])) applied to the management and treatment of data offered by the first module (images/video), passing through the first submodule

(first module is connected to the second submodule via the first submodule as described above).

In re claim 9:

Schofield et al. as modified by Talbot as applied to claim 1 above discloses said first module (camera) is incorporated in a compact casing, susceptible to be inserted in a reduced housing, as in the interior of a support structure of a rear view mirror (Schofield et al., Figs. 110-122, camera is within a casing 8518 in reduced housing 8514, page 65, paragraph [0473]).

In re claim 10:

Schofield et al. as modified by Talbot as applied to claim 1 above discloses wherein said casing has a protruding tubular sector which houses a lens or optical system located on a detecting matrix of the electro-optical detecting device, in order to appropriately focus the images to be picked up (Schofield et al., Figs. 111-113, lens 8536 of the camera is within a protruding tubular sector aligned with the electro-optical detecting device, page 65, paragraph [0473]).

In re claim 11:

Schofield et al. as modified by Talbot as applied to claim 10 discloses a conditioning element near by said lens or optical system for conditioning the transparency conditions

of the mentioned lens (Schofield et al., a lens heater for defog/de-icing the camera lens to condition the lens transparency, page 19, paragraph [0264]).

In re claim 12:

Schofield et al. as modified by Talbot as applied to claim 11 discloses said casing being waterproof, encapsulated, or the like (Schofield et al., pages 45-46, paragraph [0384]). Schofield et al. as modified by Talbot also discloses a protective cover for the lens being made of metal or plastic (Schofield et al., page 19, paragraph [0264]).

Schofield et al. as modified by Talbot as applied to claim 11 does not explicitly disclose the casing being metallic. However, metallic casing is commonly known in the art and it would have been obvious to one having ordinary skill in the art at the time of invention to construct the casing of Schofield et al. using metallic materials because Schofield et al. describes appropriate sealing and component encapsulation for protection of the camera being known in the art (pages 45-46, paragraph [0384]) and also describes protective materials being constructed from metal.

In re claim 13:

Schofield et al. as modified by Talbot as applied to claim 11 discloses the conditioning element being a lens heater (Schofield et al., a lens heater for defog/de-icing the camera lens to condition the lens transparency, page 19, paragraph [0264]).

Schofield et al. as modified by Talbot as applied to claim 11 does not explicitly the conditioning element being an electrical heater, but since defogging transparent surfaces through heating is well known to those of ordinary skill in the art at the time of the invention, it would have been obvious to one having ordinary skill in the art at the time of invention to implement the lens heater concept of Schofield et al. with an electric heater (well known in the art as a resistive heater) to obtain the desirable functionality of removing condensation or ice from the lens via evaporation to increase the lens transparency.

In re claim 14:

Schofield et al. as modified by Talbot as applied to claim 3 above discloses a multicore wiring means, as a cabling or flat cable (Schofield et al., Fig. 119, 8658, page 67, paragraph [0482] and pages 30-31, paragraph [0313]), with bidirectional signals flow, through a connector (Schofield et al., Fig. 77, 7732, pages 56-57, paragraph [0417]), a part of which is integrated in a connector casing (Schofield et al., see Fig. 77), provided with a connector susceptible to be connected to the supply of a motor vehicle (Schofield et al., electrical power for camera system is supplied by the motor vehicle electrical system, pages 56-57, paragraph [0417] and page 28, paragraph [0309]).

Schofield et al. as modified by Talbot as applied to claim 3 above does not explicitly disclose the power cable connections between the first and second submodule.

However, one of ordinary skill in the art at the time of invention would recognize that Schofield et al. illustrates in several different embodiments the central idea of a camera system (first module, Fig. 26A, 2645, page 23, paragraph [0291]) connected to a user-interface device (second submodule, Fig. 26A, any of the in-cabin mirror-mounted and/or windshield-mounted/header-mounted and/or interior cabin pillar-mounted video screens of the invention of Schofield et al., pages 23-24, paragraph [0291]) through a regulator power circuit (first submodule, switching regulator circuit, page 35, paragraph [0326]), with the power for all modules/submodules being delivered via the vehicle electrical system (powered by the 12V or 42V vehicle battery systems, page 35, paragraph [0326] and page 28, paragraph [0309]). Multicore wiring means are commonly known in the art in the form of coaxial cable or twisted-pair category 5 cable, or even as a group of individually insulated wires bundled together an enclosed in a common sheath (Fig. 77, 7730, pages 56-57, paragraph [0417]). Therefore, as Schofield et al. as modified by Talbot as applied to claim 3 above discloses the two submodules and first module and the cabling means, it would have been obvious to one having ordinary skill in the art at the time of invention to connect the first module to the second submodule through the first submodule (all modules taught by Schofield et al.) to obtain the desirable feature of a regulated power source supplying constant electrical power to the camera thereby reducing electrical noise and improving the camera output signal.

In re claim 15:

Schofield et al. as modified by Talbot as applied to claim 6 above discloses use of ASIC chips to control multiple displays and cameras, so as such, the ASIC chip is associated with the electro-optical detecting device and the processor (Schofield et al., page 44, paragraph [0379]).

In re claim 16:

Schofield et al. as modified by Talbot as applied to claim 6 above discloses said filter of the first module is responsible for the filtration of entry voltages to the first module coming from the first submodule (filter of Talbot applied to first module/camera of Schofield et al. functions to filter the voltage supplied, Talbot, Fig. 5, 60 filters the voltage entering the circuit on the other side of the regulator).

In re claim 17:

Schofield et al. as modified by Talbot as applied to claim 14 above discloses a rigid multilayer printed circuit board (Schofield et al., Figs. 96 and 98, 8462 clearly has 2 distinct layers, front and back, page 62, paragraph [0452]) united to the first module through a flexible printed circuit (Schofield et al., Figs. 93, 94, and 96, 8464 is a flexible printed circuit cable, page 62, paragraph [0452], united to the camera electrically as 8464 is connected to the display screen that displays the electronic images from the camera). Additionally, Schofield et al. discloses another printed circuit board (Schofield et al., Fig. 46a, 4517a, page 38, paragraph [0340]) united to the first module through a connector (Schofield et al., Fig. 46a, 4514a, page 38, paragraph [0340]) that supplies

power and provides for bidirectional signals pass (signals pass to the vehicle CAN or LIN bus systems, Schofield et al., page 38, paragraph [0340]).

Schofield et al. as modified by Talbot as applied to claim 14 above does not explicitly disclose the circuits of the first submodule are located on a rigid multilayer PCB integrated within the connector casing. However, as the circuits of the first submodule comprise voltage regulators and filters (both common electrical components are often used on PCBs to decrease noise and regulate supply voltage to the desired level), it would have been obvious to one having ordinary skill in the art at the time of invention to manufacture the first submodule circuits taught by Schofield et al. on a rigid multilayer PCB taught by Schofield et al. and enclose said PCB within a connector casing (Schofield et al., Fig. 77, 7728 is a connector casing, pages 56-57, paragraph [0417]) to obtain the desirable feature of an efficient compact connecter with stable power deliver capabilities as PCBs allow for compact circuit implementation.

In re claim 19:

Schofield et al. as modified by Talbot as applied to claim 7 above discloses wherein in the first submodule, one of both filters is of entry type and responsible for the filtration of voltages coming from the second submodule and one of both filters is of exit type and responsible for the filtration of one or more voltages coming from said regulating circuit, applied to the regulation of a voltage coming from the entry filter (filter layout was discussed previously with filters being placed at the inputs and outputs of the respective

module and submodules and the filter taught by Talbot can be used as an entry or exit type filter by placing the filter across the positive and negative terminal of the voltage input as shown by Talbot in Fig. 5, capacitor 60).

In re claim 20:

Schofield et al. as modified by Talbot as applied to claim 8 above discloses wherein in the second supply submodule (user interface), one of both filters is of entry type and responsible for the filtration of voltages coming from a battery (filters are placed at the inputs and outputs of each module and submodule as described above, therefore one of the second supply submodule filters is of entry type and filters the input from the vehicle electrical system/battery, Schofield et al., Fig. 77, connector 7728, pages 56-57, paragraph [0417]), located in the interior of the motor vehicle (battery is commonly known to be inside the car, usually in the engine bay, which is part of the interior of the vehicle) and one of both filters is of exit type and responsible for the filtration of voltages coming from said regulating circuit, which is applied to the regulation of a voltage coming from the mentioned entry filter (filter is of exit type connected between the output and ground signal lines, as shown by Talbot Fig. 5, filter 60, and filters voltages from the regulating circuit as demonstrated by Talbot Fig. 5, filter 60 near regulator 21).

In re claim 21:

Schofield et al. as modified by Talbot as applied to claim 16 above discloses said voltages are of direct type (Schofield et al., DC voltage supplied by a vehicle battery, page 35, paragraph [0326]).

In re claim 23:

Schofield et al. as modified by Talbot as applied to claim 20 above discloses wherein said regulating circuits are of switched type (Schofield et al., switched type regulator circuit, page 35, paragraph [0326]).

In re claim 24:

Schofield et al. as modified by Talbot as applied to claim 20 above discloses wherein said regulating circuits are two (Schofield et al., plural switching power supplies each with switching regulator circuits describes more than one regulating circuit, page 35, paragraph [0326]).

In re claim 25:

Schofield et al. as modified by Talbot as applied to claim 7 above does not explicitly disclose said filters are arranged in different stages but it would have been obvious to one having ordinary skill in the art at the time of the invention to construct the filter taught by Talbot (bypass capacitor connected between five Volts and ground, Talbot, Fig. 5, capacitor 60) using multiple smaller capacitors connected in parallel stages such that the sum of the capacitance of the smaller capacitors is equal to the capacitance of

the single capacitor (Talbot, Fig. 5, capacitor 60) to obtain the desirable feature of redundancy such that in the event that one capacitor fails, the filter can still function, albeit with slightly more circuit noise.

In re claim 28:

Schofield et al. as modified by Talbot as applied to claim 19 above discloses said voltages are of direct type (Schofield et al., DC voltage supplied by a vehicle battery, page 35, paragraph [0326]).

In re claim 29:

Schofield et al. as modified by Talbot as applied to claim 20 above discloses said voltages are of direct type (Schofield et al., DC voltage supplied by a vehicle battery, page 35, paragraph [0326]).

5. Claim18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schofield et al. as modified by Talbot as applied to claim 15 above, and further in view of Negishi et al. (US Patent 4,215,387).

Schofield et al. as modified by Talbot as applied to claim 15 above discloses said filters (Talbot, Fig. 5, 60, column 5, lines 3-4) and said ASIC (Schofield et al., page 44, paragraph [0379]).

Schofield et al. as modified by Talbot as applied to claim 15 above does not disclose the filters and ASIC being located on two rigid multilayer printed circuit boards (PCB) located in parallel and interconnected by a flexible multilayer printed circuit, folded and providing for a bidirectional signals pass. Negishi et al. discloses two rigid multilayer printed circuit boards (Fig. 1, boards 3-6, 24 are rigid, column 3, line 30 and column 4, lines 64-65, and boards 3-6 are used to reinforce portions of the multi-layer flexible printed circuits, column 3, lines 55-58 and column 4, line 59-column 5, line 11) located in parallel (boards are stacked, column 4, lines 52-58) and interconnected by a flexible multilayer printed circuit (the upper and lower flexible boards, 1 and 2 respectively, have a conductive layer for connecting circuit components, column 2, lines 62-66 and column 4, lines 13-22), folded and providing for bidirectional signals pass (wiring of the upper and lower flexible boards allow circuit elements 7-13 to be interconnected, allowing signals to pass in both directions, to and from the different elements, column 3, lines 37-44). It would have been obvious to put the filters and ASIC chips taught by Schofield et al., as modified by Talbot as applied to claim 15, on the two flexibly connected PCBs taught by Negishi et al. to obtain the desirable feature of reducing the space required to store the filters and ASICs (Negishi et al, column 4, lines 34-51).

6. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schofield et al. as modified by Talbot as applied to claim 20 above, and further in view of Prince et al. (US Patent 4,050,085).

Schofield et al. as modified by Talbot as applied to claim 20 above discloses regulating circuits.

Schofield et al. as modified by Talbot as applied to claim 20 above does not disclose said regulating circuits are of lineal type. However, linear type voltage regulating circuits have been commonly known in the art for decades, as demonstrated by Prince et al. published in 1977 (conventional voltage regulator, column 8, lines 49-56), and as voltage regulators are commonly known and applied in electronic circuits requiring certain voltage tolerances to be maintained, it would have been obvious to one having ordinary skill in the art at the time of invention to alternatively use a linear type voltage regulator as taught by Prince et al. in place of the regulators taught by Schofield et al. as modified by Talbot as applied to claim 20.

7. Claims 26-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schofield et al. as modified by Talbot as applied to claim 1 above, and further in view of Johnson et al. (US Patent 6,163,338).

In re claim 26:

Schofield et al. as modified by Talbot as applied to claim 1 does not explicitly disclose said electro-optical detecting device is an analogue camera. Johnson et al. describes the CCD or CMOS image sensor output as being an analog signal (column 4, lines 20-42) which is then sent to an analog to digital converter (Fig. 1, 10, column 4, lines 31-32). As the output from CCD or CMOS image sensors is an analog signal and

Schofield et al. uses CCD or CMOS image sensors to capture images electrically, it would have been obvious to one having ordinary skill in the art at the time of invention to connect the output of the image sensor taught by Schofield et al. to an analog to digital converter as taught by Johnson et al. to obtain the desirable feature of using the analog information from the image sensor in a digital processing circuit.

In re claim 27:

Schofield et al. as modified by Talbot and Johnson et al. as applied to claim 26 above discloses wherein said camera disposes of a conditioning element for conditioning the transparency conditions of a lens integrated therein (Schofield et al., a lens heater for defog/de-icing the camera lens to condition the lens transparency, page 19, paragraph [0264].

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a. Rosinski et al. (US Patent 5,793,308) discusses the use of a heater for defogging an imaging surface.

b. Ramachandran et al. (US Patent 6,259,475 B1) discusses a camera system for viewing blind-spots of a motor vehicle.

c. Iverson (US Patent Application Publication US 2002/0067425 A1) discusses a waterproof, metallic housing for a camera.

d. Williams (US Patent Application Publication US 2002/0113873 A1) discusses a rear-view camera system.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANDREW WILLIAMS whose telephone number is (571) 270-3404. The examiner can normally be reached on Monday-Friday, 7:30 a.m. to 5 p.m., EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kimberly D. Nguyen can be reached on (571) 272-2402. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

APW

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